



Non-Linear Harmonic Models for some Geophysical Time Series

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By using a non-linear harmonic analysis, we have analyzed several geophysical time series. Thus, we have obtained non-linear harmonic models that describe the length of the day (in msec. of time) among other long term time series. In each case, time series are decomposed in a sum of a deterministic trend, a periodic component and a residual part. To carry out this task, we have extracted frequencies that are hidden in the data (one by one) and we have estimated the three aforementioned components from this information. The frequency extraction process continues until the residual root mean squared becomes smaller or until we get as many frequencies as we consider appropriated to describe the phenomenon we study.